METHOD FOR PROCESSING ADDRESS OF SHORT MESSAGE SERVICE

CENTER IN IMT-2000 ASYNCHRONOUS NETWORK

5   Technical Field

The present invention relates to a method for processing an address of a short message service center in an IMT-2000 asynchronous network which uses a mobile station ISDN (MSIDSN) as a short message service center address stored in a mobile station defined in 3GPP for routing and

10   subscriber distribution of the short message service center in an UMTS (Universal Mobile Telecommunication Service) network, instead of using a real short message service center address.

Background Art

15   In general, in 3GPP, when an MS (Mobile Station) transmits a short message, the short message is transmitted to a corresponding SC (Service Center) based on an SC address from the MS. Here, the SC address from the MS is a secret number of the SC. That is, the SC set up in the MS processes the message.

20   In this method, when an SMS (Short Message Service) provider and a core network provider are different, subscribers can select the SMS provider.

Referring to Fig. 1, when an SC address is designated as an SC number, if an MS 10 transmits a short message, it is transmitted to an

25   MSC/SGSN/VLR 20 with the SC address stored in the MS 10 (S100).

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The MSC/SGSN/VLR 20 transmits a message MAP_MO_FORWARD_ SHORT_MESSAGE to an SMSC (Short Message Service Center) 30 having the SC address (S102). Here, the transmitted SC address is the SC number, and the MSC/SGSN/VLR 20 manages routing information of the corresponding SMSC 30 by SC numbers.

The SMSC 30 processes the short message, and outputs a message MAP_MO_FORWARD_SHORT_MESSAGE_ACK to the MSC/SGSN/VLR 20. The MSC/SGSN/VLR 20 outputs a short message response SHORT MESSAGE ACK to the MS 10 to notify that the short message has been successfully processed (S102 and S103).

However, when the SMS provider and the core network provider are identical, if the provider has a plurality of SC, a lot of messages may be centralized in a specific SMSC according to call habits of subscribers as shown in Fig. 2. That is, when the SC address means the secret number of the SC, the messages may not be evenly distributed to the SMSC. There is no way of distributing some subscribers of one SMSC to another SMSC, and thus SC reception ability is not predictable. It is also hard to actively cope with civil appeals and troubles.

Disclosure of Invention

An object of the present invention is to provide a method for processing an address of a short message service center in an IMT-2000 asynchronous network which can efficiently utilize the network by using a mobile station ISDN as a mobile switching center address stored in a mobile station defined in 3GPP for routing and subscriber distribution of the

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short message service center, instead of using a real mobile switching center address.

In order to achieve the above-described object of the invention, there is provided a method for processing an address of a short message service center in a WCDMA network, including: a load centralization confirmation step where an operation control unit receives short message processing states from each short message service center, confirms load centralization states of each short message service center, and generates an operation message; a path setup step where a mobile switching center receives a short message from a mobile station, and sets up a transmission path of the short message according to the operation message; and an optimal transmission step where the mobile switching center transmits the short message from the mobile station to the corresponding short message service center through the transmission path according to the result of the path setup step.

Brief Description of the Drawings

Fig. 1 is a flowchart showing a conventional method for processing short message service transmission;

Fig. 2 is an exemplary diagram illustrating load centralization of a general short message service center;

Fig. 3 is a block diagram illustrating a network structure for processing a short message service which the present invention can be applied to;

Fig. 4 is an exemplary diagram illustrating a format of a destination

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address transmitted to a mobile switching center in accordance with the present invention;

Fig. 5 is a flowchart showing a method for processing short message service transmission in accordance with the present invention;

5   Fig. 6 is an exemplary diagram illustrating routing from the mobile switching center to short message service centers based on MSIDSN in accordance with the present invention;

Fig. 7 is an exemplary diagram illustrating load concentration of the short message service center in accordance with the present invention; and

10   Fig. 8 is an exemplary diagram illustrating routing for subscriber distribution in load centralization in accordance with the present invention.

Best mode for Carrying Out the Invention

15   A method for processing an address of a short message service center in an IMT-2000 asynchronous network in accordance with the present invention will now be described in detail with reference to the accompanying drawings.

Fig. 3 is a block diagram illustrating a network structure for

20   processing a short message service which the present invention can be applied to.

As illustrated in Fig. 3, the network structure is composed of an MS (Mobile Station) 10, an MSC/SGSN/VLR 20, a plurality of SMSC (Short Message Service Center) 30 linked to a plurality of MSC (Mobile Switching

25   Center), HLR (Home Location Register), VMS/FMS (Voice Mail System/Fax

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Mail System), IVR (Interactive Voice Response) and other SME (Short

Message Entity), for providing a supplementary service for enabling mobile

phone subscribers to transmit/receive short messages in the form of

characters, and an operation control unit 40 for outputting an operation

5   message to the MSC/SGSN/VLR 20 and controlling variations of a message

transmission path according to real-time statistical data of short message

processing states of each SMSC 30.

The operation of the present invention will now be explained.

Fig. 5 is a flowchart showing a method for processing short message

10   service transmission in accordance with the present invention.

As depicted in Fig. 5, when an SC address is an MSISDN, if the MS

10 transmits a short message, it is transmitted to the MSC/SGSN/VLR 20

with the SC address stored in the MS 10 (S200). Here, the SC address is

stored in an SIM (Subscriber Information Module) card of the MS 10. When

15   the subscriber transmits the short message, the SC address is included in a

DA (Destination Address) of RP (Release Protocol)-data, and transmitted to

the MSC/SGSN/VLR 20 (S200). Fig. 4 shows a format of the DA.

As shown in Fig. 4, octet 1 denotes an intrinsic value of the DA (RP-

data has IDs by parameters, and octet 1 shows an intrinsic ID of the RP-

20   data), and octet 2 denotes a whole length of parameters. 1 ext of octet 3

always implies ' 1' , and type of number is generally international, national

or unknown. Real numbers are used from octet 4.

The MSC/SGSN/VLR 20 transmits a message MAP_MO_FORWARD_

SHORT_MESSAGE to the SMSC 30 having the corresponding SC address

25   (S201). The SC address is the MSISDN of the subscriber.

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Here, the MSC/SGSN/VLR 20 requires rooting information to decide which SMSC 30 it should transmit the message to by using the MSISDN. The operation control unit 40 receives the short message processing states from each SMSC 30 in the real time, and confirms load centralization of

5   each SMSC (the SMSC processing a relatively small number of short messages is regarded as a minimum load centralization SMSC in the real time). When the SMSC shows load centralization, the operation control unit 40 transmits an operation message to the MSC/SGSN/VLR 20 in order to newly set up a short message transmission path to the minimum load

10   centralization SMSC. Thus, the MSC/SGSN/VLR 20 has transmission path information (routing information).

The SMSC 30 processes the short message and outputs a message MAP_MO_FORWARD_SHORT_MESSAGE_ACK to the MSC/SGSN/VLR 20. The MSC/SGSN/VLR 20 outputs a short message response SHORT

15   MESSAGE ACK to the MS 10 to notify that the short message has been successfully processed (S202 and S203).

Accordingly, when the SC address is the MSISDN, as shown in Fig. 6, the subscribers can be efficiently distributed to the SMSC 30 according to office data operations of the MSC/SGSN/VLR 20. That is, when SMSC call

20   attempts are not balanced due to call habits of the subscribers, load can be reduced by changing routing information of some subscribers of the SMSC 30 (for example, by prefixes).

For example, the MSC/SGSN/VLR 20 performs SMSC routing by prefixes of subscribers as shown in Fig. 7. When load increases in SMSC1

25   due to call habits of the subscribers, some of the prefixes routed to SMSC1

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are controlled to be routed to SMSC3 as shown in Fig. 8. As a result, load of SMSC1 is adjusted.

As the present invention may be embodied in several forms without departing from the spirit or essential characteristics thereof, it should also be understood that the above-described embodiment is not limited by any of the details of the foregoing description, unless otherwise specified, but rather should be construed broadly within its spirit and scope as defined in the appended claims, and therefore all changes and modifications that fall within the metes and bounds of the claims, or equivalences of such metes and bounds are therefore intended to be embraced by the appended claims.

INDUSTRIAL APPLICABILITY

As described above, when a lot of messages are centralized to a specific SMSC due to call habits of subscribers, the method for providing the short message service in the WCDMA network distributes some subscribers of the SMSC to another SMSC, and thus SC reception ability is predictable. It is also possible to actively cope with civil appeals and troubles.